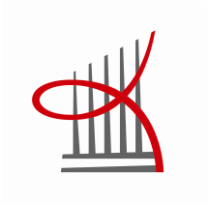


Toward continual development with ERP

Case BillerudKorsnäs Finland Oy

Paula Perälä

Bachelor's thesis
December 2014
International Business

TAMPEREEN AMMATTIKORKEAKOULU
Tampere University of Applied Sciences

ABSTRACT

Tampereen ammattikorkeakoulu
Tampere University of Applied Sciences
International Business
Paula Perälä:
Toward continual development with ERP
Case BillerudKorsnäs Finland Oy

Supervisor Anasse Bouhlal
Commissioned by BillerudKorsnäs Finland Oy

Bachelor's thesis 55 pages, appendices 1 page
December 2014

An ERP system implementation is a large project in its importance to the business and in the way that it affects different areas of the company. There are many benefits to be gained but there are varying results of the success of an ERP project among the huge number of companies that have adopted ERP systems.

This thesis is a case study examining the post-implementation period at BillerudKorsnäs Finland Oy. The company has two paper machines and a small customer service team in Finland. It belongs to a Swedish mother company, which has altogether eight production units and about 4300 employees in 13 countries. In June 2012 Billerud bought them from UPM which began a transition period of carrying over the customer service team's order fulfillment process from the old owner to the new. This was finalized in October the same year when Billerud's ERP system BonD was implemented in replacement of UPM's SAP.

The company continued to grow as a merger between Billerud and Korsnäs was announced in the beginning of 2013. This has continued the state of development in the company. In order to unify the two former companies and their order fulfillment processes, a common ERP system will be implemented. This was announced in the second quarter of 2014 and the company wide project is planned to take 2,5 years. The replacing ERP system will be implemented for the Finnish customer service team in the final quarter of 2015.

The thesis analyzes where the customer service team has landed with the ERP system that was implemented in 2012. It also takes a look at the prospects for a new implementation project with the background of the team's previous experience. The aim is to bring out the main concerns and to pinpoint the underlying issues behind those. A survey was sent to the team and its manager and two super users were interviewed.

The results show that the team has come a long way from the initial chaotic feelings around the go-live to working with both daily and problem solving tasks. Business process improvements have not been carefully planned or actively implemented, which is why the team has not gained the potential benefits of an ERP system. The analysis gives insight into how the upcoming ERP implementation project can be run in a more successful way from both process and personnel perspective.

Key words: enterprise resource planning, post-implementation, business process

CONTENTS

ABBREVIATIONS AND TERMS

ERP	enterprise resource planning
MRP	materials requirements planning
BPR	business process reengineering
OCM	organizational change management
SCM	supply chain management
EDI	electronic data interchange

1 INTRODUCTION

1.1 BillerudKorsnäs Finland Oy

In the beginning of June 2012 Billerud purchased packaging paper production and processes from UPM which became its daughter company Billerud Finland Oy. A half a year later Billerud AB merged with Korsnäs to form a new company BillerudKorsnäs and as a result the daughter company was renamed BillerudKorsnäs Finland Oy. The company as a whole has eight production units for packaging paper, consumer board, and pulp and sales of about SEK 20 billion. There are customer service centres in around ten countries. The number of employees is 4,300 in 13 countries. There are two production units in Finland – Tervasaari with 55 employees and Pietarsaari with 100 employees. A customer service centre is located in Tampere and has 15 employees.

This team of employees has a various amount of work experience within the company ranging from less than a year to forty years. The different functions within the team are lead planning, production planning and delivery planning. The chain of changes that the team has met began in 2009. UPM changed its supply chain structure to that more of a process organization as it moved the functions which each mill had its own to a supply chain centre. There order fulfilment teams for different product categories were created and the ERP system used was SAP. After a year UPM launched an organization wide mill execution system.

Not long after was the team bought, which first brought along a process change for the transition from one company to another. The second change was the ERP implementation. In the beginning of 2013 a new update of the ERP system was made with customized functions for the team's needs. This was soon followed by a new supply chain management created from the merger with Korsnäs. The new management had a new strategy and brought changes to the order fulfilment process. So the team has faced six different changes in four years' time. In the spring of 2013 the emerged company began to investigate changing from two systems to one. In the spring of 2014 it was announced that this would happen and the change will be carried out for the Tampere customer service centre in autumn 2015.

1.2 Objectives of the thesis

I did a survey in the beginning of 2014 about preparing to a new ERP system implementation. The intention was to find out what the situation is like a little over a year from the implementation. I also wanted to find out how the employees feel about a possible new system change and how they should be taken into consideration right from the start. About two months after the survey was carried out, the management announced that the implementation will take place and the Billerud system will be replaced by the Korsnäs system. Both the companies already shared the same mill execution system, which has the same supplier as the new ERP system.

My research questions are:
What should the company take from the current situation?
What to expect and prepare for in the new system change?
What to learn from the previous system change and the team's experiences of that?

1.3 Theoretical framework of the thesis

In the thesis I am looking at ERP system implementation from different theoretical perspectives as it is multidisciplinary topic. Defining ERP systems and their development is done from both computer sciences and operations management theoretical point of view. ERP system implementation is considered mainly within a theoretical framework of business process management and project management.

1.4 Research methods

In the empirical research qualitative data was collected from the customer service team in the case company. First an anonymous survey was sent out to all the thirteen employees (working at the time) as well as the manager of the team. The survey consists of six open questions, as the intention was to collect as much as possible of the personnel's views, experiences and feelings. Twelve out of fourteen answered the survey. In a second part of the data collection three individual interviews were held: one for each super user in the team and one for the manager. The interviews were recorded. The author of

the thesis is also a super user and has personal experience from working in different functions in and around the change.

1.5 Structure of the thesis

My theoretical framework consists of two parts: ERP system and ERP system implementation. In the first part I will define ERP systems, explained how and why they were developed. I will also discuss the benefits and costs of ERP systems. In the second part of the theory I will describe the implementation process from change management and process improvement point of view. I will also explain the different project and strategic phases of an implementation process. Then I will present the results of the empirical research. Finally I will draw the main conclusion from the theory and the case study, as well as discuss my suggestions for using the knowledge about the employees' experience to succeed in the upcoming project and benefit in a long turn.

2 ENTERPRISE RESOURCE PLANNING SYSTEMS

2.1 Definition

An enterprise resource planning (ERP) system is a large, integrated information system that stores organization wide data thus enabling a holistic view of operations in real time and support for enterprise processes. (Krajewski et al. 2008) An ERP system consists of a single database and application programs surrounding it. The way the system works is that the application programs take data from the database and conduct analysis or collect additional data. Once information is entered into the system it becomes available for any user who needs it. (Fawcett et al. 2007)

2.1.1 Technology

Technology used in ERP includes the operating system, relational database, client server technology, network requirements, and software. The most significant enabler that gave ERP system popularity its boost is the client server technology. ERP systems are based on client-server technology, which refers to the link between a user's computer (client) and computing source providing computing resources, software, or data (server). Before this technological development in the early 1990's enterprise computing was done on a single computer (box) which users shared from their terminals. This computing environment based on one computing resource and several terminals is called mainframe computing. The increase of computing capabilities at the user's facilities ultimately resulted in the development of the client server computing. (O'Leary 2000)

Client-server technology made remote access easier than mainframe technology had done and companies could start using commodity hardware units. With this computer technology in the background ERP systems had increased applications and decreased costs. In the late 1990's ERP implementation became a boom, then a standard among big companies and lately a development for smaller companies. (Hughes 2008)

2.1.2 Design

An ERP system can be used to connect all the different functions across the whole company. Figure 1 illustrates this with the use of the primary business processes and the typical functions within them.

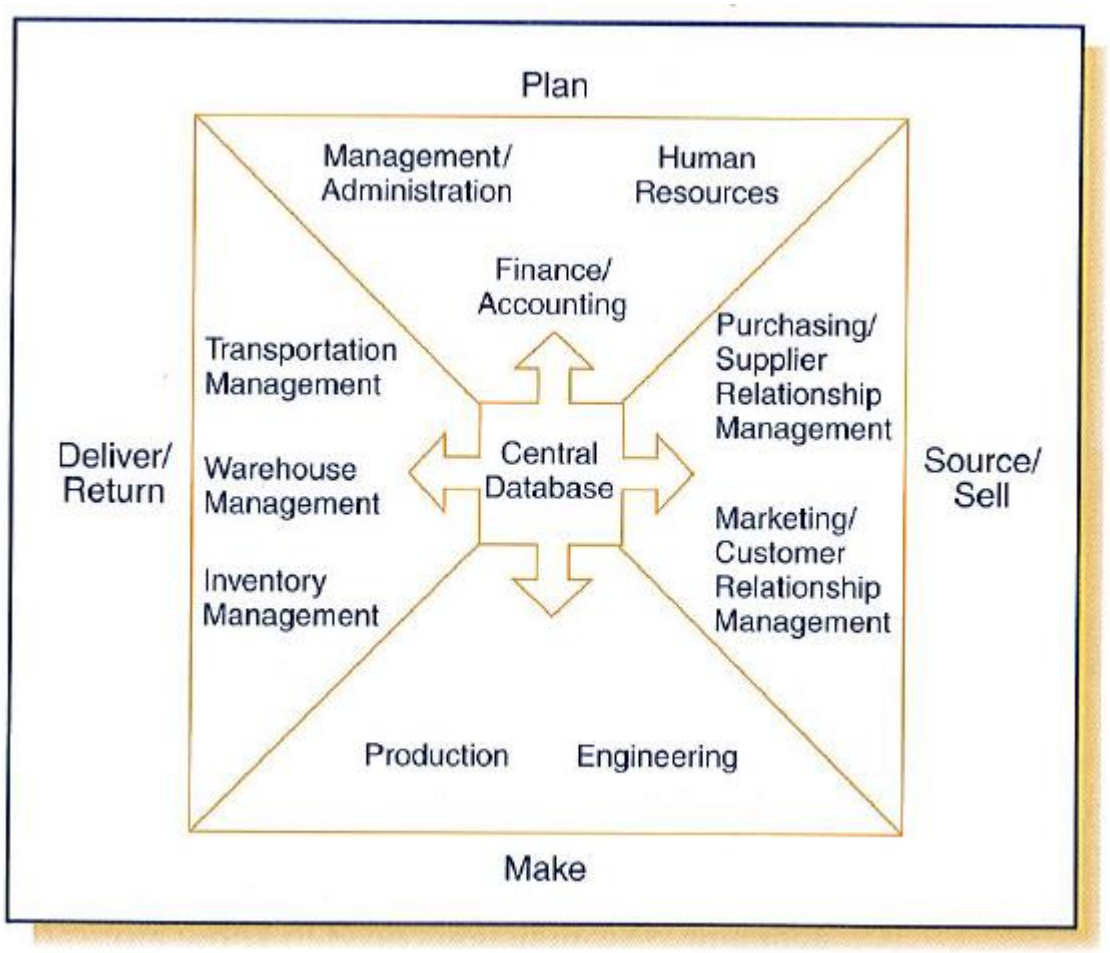


Figure 1. Typical ERP System Components (Fawcett et. al. 2007)

An ERP system enables strategic and tactical planning as well as accountability or reporting for overall management, administration, finance, accounting, and human resource management. Sourcing includes both perspectives of the buyer-supplier relationship. An ERP system supports both order processing for purchasing from suppliers and for selling to customers. A number of processes can also be included in making, such as production, manufacturing, assembly, or service delivery processes. An ERP system is also typically used to handle delivery and return processes including the organization's logistics, warehousing, and transportation processes. (Fawcett et. al. 2007)

2.1.3 Customization

ERP systems can be customized and used in processing an organization's transactions to a chosen extent. They often also have a support for multiple currencies and languages which is important to multinational companies. In addition to that ERP systems can support a wide range of industries and be specified to them. A lot of customizing can be done though switch setting instead of a need for programming. (O'Leary, 2000)

From the vast number of processes and function within them that an ERP system can support, companies choose the extent to which they like to rely on the system. The level at which an ERP system functions best is case-specific in terms of company, system provider and implementation project. Because of all the aspects some company managers believe an ERP is the answer to all problems, whereas others believe an ERP system does not deliver its promises. (Fawcett et. al. 2007)

2.1.4 Systems integration

The functionality of an ERP system comes down to its integration, as it is the way ERP systems achieve communication. The process of communication between systems or modules is interface. There are different interface techniques such as communication protocols, software, Internet and workflows. The amount of integration can vary considerably from module to module or from system to system. (Travis, 2000) Although ERP systems are designed to integrate all information flows within a company, it is not the solution as many companies choose to keep other applications co-existing alongside ERP. Most successful integrations are made when incorporating EDI (electronic data interchange) applications with ERP infrastructure. (Themistocleous et. al. 2001)

EDI has been in use for over 40 years as the way for companies to exchange business data electronically between computer applications. EDI uses a mutually agreed standard for describing the data in the message. First data is extracted in an application-specific data format, then translated into EDI format and transmitted over a network to another application. The received EDI message is re-translated back into an application-readable format. EDI is commonly used as a two-way process and implies integration between the applications at each end. With the use of EDI companies are able to integrate their

businesses and automate processes inside the company and between companies. (Van De Putte, 2003)

In the case company the integration in 2012 included financial modules, operations and logistics modules, as well as sales modules. EDI connection was established to integrate the ERP system with the mill system, which includes production planning and warehouse functions used in the customer service center. EDI connection was also used to connect the delivery booking processes with the biggest business partners that had the possibility. This means that the employees need to extract, exchange, and insert data manually with some of the partners.

2.2 Development of the process organization

ERP systems are not simply a development in computing technology field. They were developed alongside changes in the way business is done in modern organizations. Therefore ERP system development cannot be discussed without mentioning the development from functional organizations to process organizations.

In its simplicity process is a series of actions that takes input, transforms it, and produces an output. (Jacka and Keller, 2002) There is a preferred order, an identifiable beginning and end, inputs, and clearly defined outputs all geared toward adding value to the customer. Business process in itself is not a new concept but it has become a way of thinking that is causing a revolution in the world of business. Companies are shifting from organizing by business functions to business processes instead in order to survive the competition in today's fast-paced and fast-changing environment. (Vonderembse and White, 1996)

Customers are not concerned about functional issues but about how the outputs of the organization meet their requirements for response time, product performance and features, product quality, price, service and customer specific needs. Organizational processes create the company's competitive capabilities to meet these requirements as they tend to focus attention on activities that customers value and enable quick decision making.

Functional organizations are slower to respond as decisions have to go through the different functional areas such as accounting, finance, marketing, IT, engineering, personnel, and operations management one at a time where as business processes work across these functions. The way that business processes work generates more customer required value. This is illustrated by Vonderembse and White as how business processes work in relationship to functional areas and customer requirements.

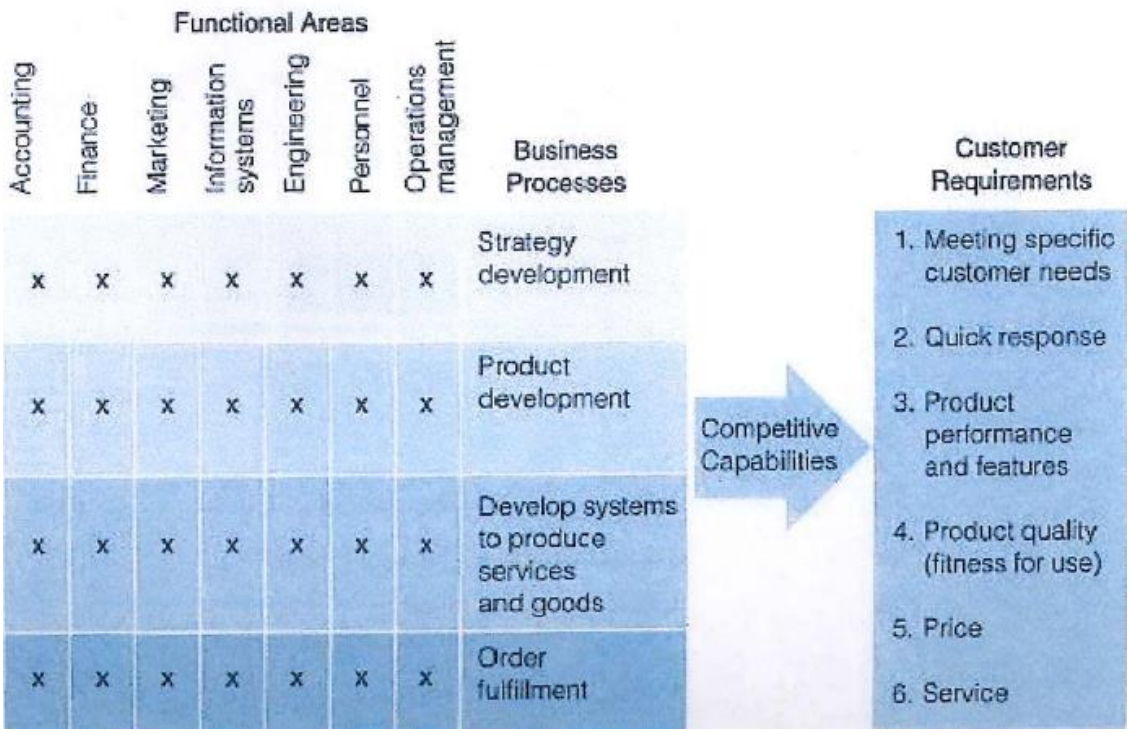


Figure 2. Relationship between functions, processes and outcomes. (Vonderembse and White, 1996)

Organizations should design business processes that enable them to achieve competitive capabilities such as flexibility, productivity, quality and time. Flexibility is the ability to change the customer order as requested and yet with minimal costs and delays. Increased productivity means achieving the same amount of work with less effort or time or doing more work with the same effort and time. Quality can be enhanced by applying new technology, developing new materials, and improving operations through better management and training. Most notable competitive advantage for a process is the aggregate time it takes for the customer from ordering a product to receiving it. Technology in itself is not competitive advantage, but it should enable organizations to develop them. (Vonderembse and White, 1996)

2.3 Development of enterprise resource planning systems

Most businesses tend to have more than a handful of functions that need at least a basic system to run them. Common examples of different systems in business-wide use are sales orders, customer billing, purchase orders, stock control, accounts receivable, bank reconciliation, payroll, financial accounting, distribution, accounts payable, personnel records, and assets management. In order for a business to operate these almost universal applications need to be quite closely linked and well-coordinated. Information linking these applications is provided by an information system, which in some form has become a necessity.

When electronic data processing first began to develop, it was through the development of computer applications for single functions having exclusive use of their own data files. It was necessary to transfer interrelated data from one system to another by manually re-inputting printed reports or by a batch operation carried out overnight. That means one application would generate a file of data changes which were used to update the other application. The need for integrated applications and shared data stores lead to the idea of a corporate database to hold in one place all the data stored and used by an organization both in day-to-day operations and in longer-term planning.

The next popular development was the legacy system, which quickly became the core IT system crucial to operating the business. Legacy systems were the justification for many organizations to adopt IT in the first place. They were the key applications and over the years began to be burdened by numerous software modifications to meet new, often external requirements. It became a problem that the software is too unstructured and difficult to amend anymore after all the modifications. Another problem was posed by the new millennium that many systems were unable to differentiate as date formats had only two digits for the year. This is called the Y2K problem which was the final straw for many organizations.

The first successful integrated computer systems were in the manufacturing industry. There the requirements for planning production can be quite complex due to such a bill of materials. Computer automation was an ideal solution for the calculations based on components, raw materials, stock levels, orders placed and dates identified. This software was first called materials requirements planning (MRP) but with further develop-

ments such as including staffing and finance into the calculations, the new generation software was called MRP II for manufacturing resource planning.

With extensions to the range of integrated business applications in MRP II, the concept of ERP (enterprise resource planning) software emerged. So it is from these roots that the system gets its name, which nowadays does not necessarily sound accurately descriptive. However it encompasses the important principle behind the need for an ERP system that is the using of data about new developments to forecast future repercussions. From this we can draw a simple definition of an ERP system including its three main aspects: an ERP system is an integrated set of applications supporting business processes with a single unified database. (Hughes, 2008)

2.4 Benefits of enterprise resource planning systems in process organizations

In modern day business companies are focusing on creating competitive advantage through two main aspects: fast service and low expenses. These are also the reasons used to justify the need for an ERP system because it can lead to more efficient business processes and making them less expensive. (Monk, 2009) An ERP system has a long list of benefits which are embedded in the way that the system changes the basic nature of organizations.

2.4.1 Supply chain integration

With the integration of organization wide data, comes the integration of activities. As different locations and functions no longer have different systems for their own data, the boundaries of different locations and functions are also unnecessary. Companies no longer need to have the same set of functional departments in each location. Instead they have created more centralized business process units which are more integrated with one another through the use of the same system. (O'Leary, 2000)

2.4.2 Best practices

The use of one system brings people together to work in a more uniform manner. The system narrows down different ways of working and leads companies to choosing ‘best practices’. An ERP system can have integrated in them many best practice business processes but companies must decide which to implement. Choosing best practices to use can improve the way companies do business. (O’Leary, 2000)

With the ERP system enabled organizational standardization companies can also create a better, more uniform image. For example when sending out documents from different branches or plants, customer companies receive a common view, which makes it easier and more comfortable for them to do broad business. (Monk, 2009)

2.4.3 Transparency

A single underlying database where an ERP system puts all the information eliminates many information asymmetries. For one this increases control as everyone can see in real time whether a task has been done or not. Secondly the availability of a wide range of information simultaneously allows better decision-making. Also information is no longer a bargaining chip but available both up and down the organization allowing more independence and eliminating a need for someone to do non-value-adding work such as preparing information. (O’Leary, 2000)

Many of the greatest benefits of ERP systems come from the accessibility of on-line and real-time information throughout the organization. With ERP systems much information is directly gathered into the computer and at the source after which it is available to everyone. In the earlier legacy systems a lot of information needed to be taken and fed from one system to another and much information was passed as paper documentation. The ease of information sharing can ease ways of working in many aspects. (O’Leary, 2000)

With the availability of data employees are able to do their planning and control work tasks more consistently. The data also links employees across the organization’s different functions and locations with processes being more interlocked. The standardization of data and processes facilitates intra-organization communication and collaboration.

With ERP systems companies have also increased and improved inter-organization communication and collaboration. Companies are sharing more information with their partners and clients, creating more transparent supply chains. ERP systems gather data and with that more people to working together both horizontally and vertically across an organization as well as in inter-organizational partnerships. (O'Leary, 2000)

2.4.4 Monitoring

ERP systems make monitoring of operations more convenient to managers when they do not have to compile the information for different performance measures but those can be run as system reports. That gives management more time to manage operations and improve them. That is one reason why ERP system implementation is often connected to business process engineering (BPR). An ERP system can improve operational efficiency in itself as well as giving the management tools for improving it, and with that come the cost savings of ERP systems. (Monk, 2009)

2.4.5 Continual development

In order to get the benefits from an implementation project, it should not only re-create the company's current processes and information system into a new ERP package. ERP software comes with best practices designed and built into it, but with a source code that enables the user to see the design and alter it in the customer package. Many companies are willing to spend a significant amount of money on software code development as they prefer to avoid changing their processes and continue doing business as they always have rather than adopting the built-in best practices of the new system. The benefits of ERP systems are embedded in finding the right balance between what the system is best designed for and needs to be customer specific. This is what also makes it an ongoing and gradual project, getting the most advantage of the ERP system in practical and in monetary value. (Monk, 2009)

2.4.6 Benefit classification

ERP systems have benefits at all organizational levels: operational, tactical, and strategic. At these levels ERP benefits are often further divided into five different categories based on where they are derived from. Operational benefits are those arising from automating cross functional processes as well as improving the cost efficiency of IT infrastructure. Tactical benefits are those within a managerial category that includes better resource management, improved decision making and planning, as well as performance monitoring, and controlling. Strategic benefits are that enable the supporting of business growth as well as organizational learning, empowerment, and employee morale. (Shang and Seddon, 2000)

The impact of the ERP system benefits should be seen as improved performance on different supply chain management perspectives. The full benefits of ERP are achieved if there are improvements in internal business processes, external business processes, customer service, and cost management. Figure 3 illustrates the classified ERP benefits impacting supply chain management from four different perspectives.

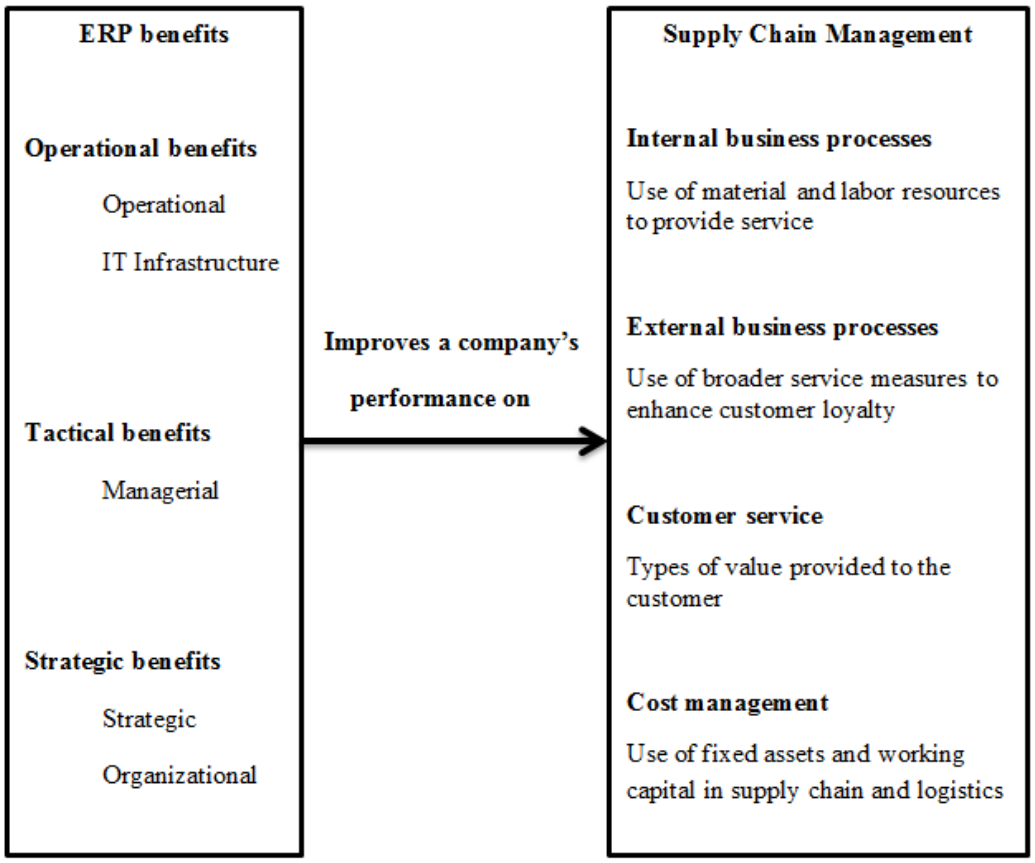


Figure 3. ERP benefits impacting SCM. (Adapted from Shu and Yang, 2009)

From an internal business process perspective an ERP system should increase efficiency of delivery and manufacturing process, improve inventory management, flexibility, information system support, and new product development. An ERP system can ease and improve external business processes, which are broader service measures used to enhance customer loyalty. An ERP system should enable providing the types of value that the company has identified for customer service.

Finally also cost management should be improved in terms of functional and integrated logistics and different supply chain cost components. According to Yang and Su, all of these can be achieved with different benefits affecting different parts of the supply chain. Strategic benefits affect only internal business processes, whereas operational benefits impact both internal and external business processes. Tactical benefits of ERP system are important factors on customer service and cost management in supply chain management performance. (Shu and Yang, 2009)

2.4.7 Achieving the benefits

There are many things which affect whether or not the many benefits of ERP systems are achieved and to what extent. Firstly there are contextual factors which create the environment for the change project. Then there are business benefit enablers that Staehr et al. have identified in three key aspects: technochange management, education, training, and support, and people resources. These three aspects lead to and are influenced by three business benefit drivers: efficient and effective use of the ERP system, business process improvement, and new projects or extensions of projects to leverage off the ERP system. The preceding context and the way the whole long-term process is carried out create the final outcome of the extent of business benefits achieved. Figure 4 illustrates this in a framework by Staehr et al.

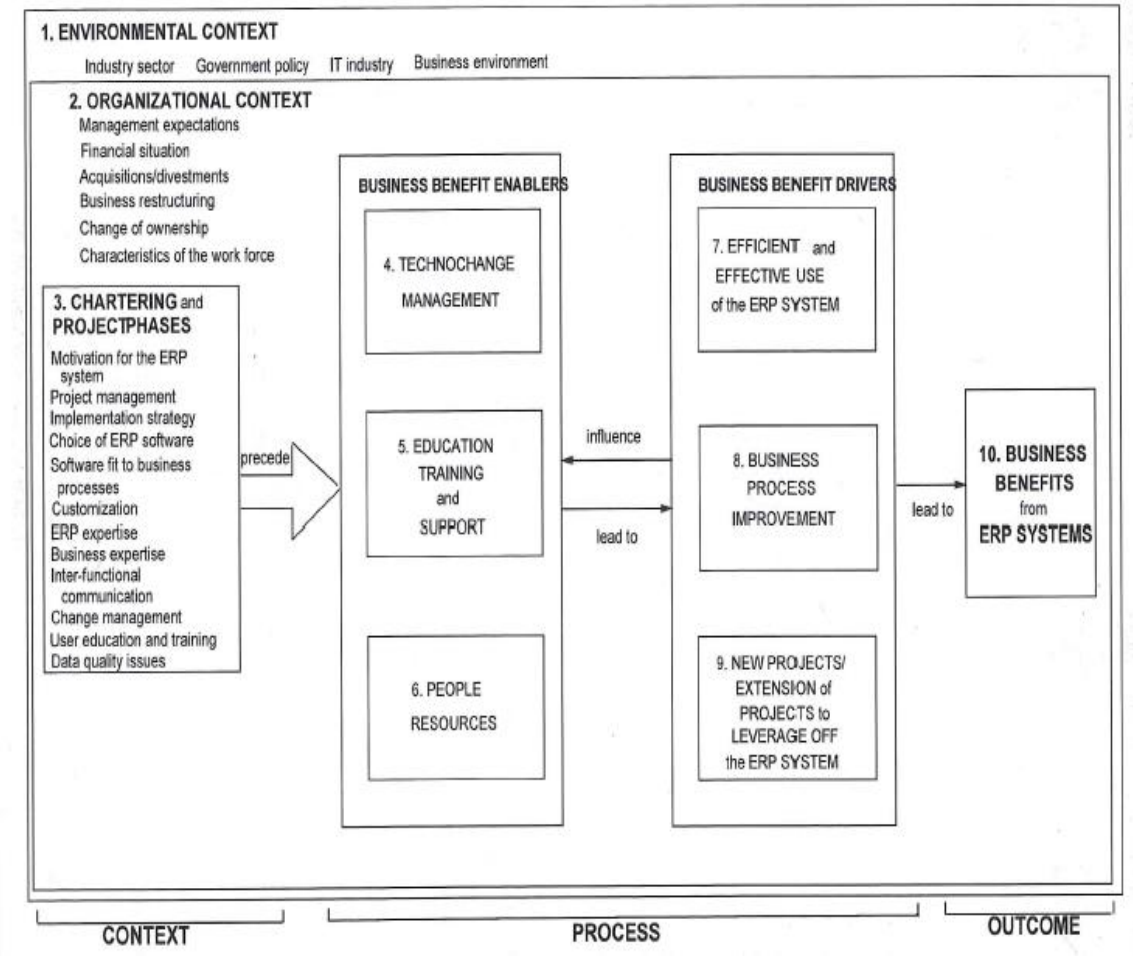


Figure 4. A framework for explaining how and why business benefits are achieved from ERP systems. (Staehr et al., 2012)

This framework explains how and why business benefits are achieved from ERP systems. According to Staehr et al. the most important requirement in reaching the business benefit drivers is all the parties involved working together over an extended period of time. Managers, users, key business users, and ERP experts should work together to see the process through all the way and especially in the post-implementation phase. The ERP implementation process should be understood and carried out as a continual process as well as a cyclical-interaction process. Therefore the business benefit enablers should be in place as available support both before and after go-live. The enablers are not only influenced by the context but also by the business benefit drivers, which makes the process cyclical and interactive. An ERP implementation project requires long-term commitment for the greatest and ultimate benefits to be achieved. (Staehr et al., 2012)

The case company's main motivation for implementing a company-wide ERP system was first the integration of the former UPM company parts into the mother company

Billerud and now for the second implementation the completion of integrating the two former companies Billerud and Korsnäs. This organizational context reflects also the environmental context, where paper industry has been going through major changes. Companies are restructuring their business in order to make necessary efficiency gains to meet the changing demand.

Whereas the first implementation was a necessity, the second is a result of a feasibility study. A comparison between the two existing systems BonD by Gaia System AB and TIPS by Tieto was made during the first quarter of 2014. As a result it was chosen that implementing TIPS would be reasonable. TIPS (Tieto Integrated Paper Solution) is expected to give better improvements through its fitness to the business process model. Customer service is located in sales offices around the world as well as in or close to the mills, and they work closely together to carry out the order fulfilment activities. Mills are located in Sweden, Finland and in England, from where the products are delivered all over the world. One common standard system will tie all the locations closer together increasing supply chain efficiency and management. As a result of a more scalable IT-infrastructure, both IT-related costs and risks are expected to reduce.

2.5 Implementation costs

An ERP implementation usually costs between $10 million and $500 million depending on company size. Though ERP systems alone are quite expensive and with licensing fees on top, the actual total costs accumulate from all parts of the implementation process. Another big expense is consulting fees as detailed expert knowledge is vital to a successful implementation. They help with configuring the software to support the processes of the particular company in question. With their experience on how ERP systems function in practice, managers can make the decisions to avoid excess data input but capture the necessary.

The implementation project requires a dedicated team of key people in the company to work with the consultants and to guide the implementation. They have the knowledge to oversee that the ERP software will support the company's needs. This requires a lot of the team members' time, which means that they are removed from their daily responsibilities. Another related cost is employee training, which starts with the project mem-

bers so that they can work successfully with the consultants in the project. They also need training to develop and deliver company-specific training for all the other employees.

Finally no matter how prepared the company is for the implementation and how smoothly it will go, there is normally a loss in productivity during the first weeks and months after the new ERP system is in place. Because an ERP implementation is expensive, companies need to identify significant financial benefits that the system will generate in the long run. The only way to do that is by using an ERP system to support more efficient and effective business processes. (Monk, 2009)

The case company's upcoming ERP implementation project is budgeted at 49,1 MSEK which is 0,4% of the company's annual profit. The system provider's costs are the biggest share of the total budget. Other main costs are consulting fees and those arising from integration with other systems such as production systems. The implementation will be carried out in six different go-live dates over the duration of 2,5 years. Part-time employees are hired where replacement is needed for the project team members. Though the project is seen as a necessity to unite the two former companies, it is also justified with estimated cost reductions related to IT, operational and process efficiency, as well as service quality improvements.

2.6 Risks

Many companies have not achieved the expected benefits of ERP and some implementations have even lead to disasters. No ERP implementation process is easy, but problems are more often related to brand new software component development rather than use of well-established ERP modules. Most commonly problems stem from ERP applications being developed in business environments that are not applicable to the existing ERP functionality. Critical factors can be divided into two main areas, either business design or implementation, which both require careful strategic decision making. (Hughes, 2008)

2.6.1 Enterprise resource planning system mismatch

A risk that can have the most severe impact on organizational adoption of an ERP system is a mismatch between ERP and the organization. If the selected ERP software is not a good fit for the business requirements, heavy customization becomes necessary to bridge the gap. Some customization is always needed and it is also a value added service offered by the system provider. When a greater level of customization is needed to eliminate problems caused by ERP mismatch, the functionality of the system is at risk and as well as the prospects for return on investment. (Mehrjerdi, 2010)

2.6.2 Training and personnel

There is a risk of failure in the ERP implementation if the new system is not properly adopted by the employees. There are two possible causes: either the employees are resistant to adopt the new system or they have not learned the necessary skills to get the benefits of the system. An ERP may often shift tasks from one function to another, which means that the employees need to learn the system for new uses as well. Though training of the personnel before the implementation is important, the primary organization risk in training and personnel is that there may not be adequately trained people afterwards. The key project staff should be available, in order to avoid the risk of losing the knowledge and leaving people unfamiliar at the aftermath of the implementation. (O'Leary, 2000)

2.6.3 Management support

In a large project like ERP system implementation, there is always a risk of underestimating the need for financial support and human resources needed. The management should ensure that a sufficient amount of resources is provided throughout the process. Otherwise the implementation might become rushed and the project team members get overloaded. Further results of that are often high staff turnover rate and ineffective knowledge transfer. What often leads to this risk is tight schedule to finish, lack of team members knowledge and management inflexibility. (Mehrjerdi, 2010)

3 ENTERPRISE RESOURCE PLANNING SYSTEM IMPLEMENTATION

3.1 Implementation process phases

ERP implementation should be a well-planned and organized project which includes different steps. First is the preparation where the technical aspects of the project are organized: the technical team, the system landscape (including servers and network), the hardware and database vendors, and most importantly the scope of the project. By careful planning a common problem of scope creep, which is when project goals and objectives expand unplanned, can be avoided. This brings the project over time and over budget, risking the success of the implementation.

The second phase includes process mapping which is probably most critical for the ERP implementation to go smoothly and provide value. Because the ERP system implementation changes and is aimed to improve the way in which processes are performed, it is critical for the company to understand both its current processes and the state of the processes after the implementation. Here process mapping tools are needed to create an illustration with detailed documentation of the business process requirement of the company. With a kind of a blueprint in hand consultants and project team members can configure the ERP system in a way that is intended for how the company will run its business with the new system. In this phase technical team members also determine the method of data transfer from the existing system, which will either be replaced or will continue to function with the new system through an interface.

In the third phase begins the practical realization but in a development system, where the ERP system is first configured. Final preparations are a fourth phase where last securing for successful implementation is done. The system throughput is tested for critical business processes to make sure the transaction volumes can be handled. There is a help desk set up for the end-users to get support from and training of the end-user is conducted. This phase also includes setting up operation of the production system and transferring data from the old system. A challenging task here is that not only does it mean managing the master data such as materials data, customer data, vendor data, and so on, but the company must also transfer transaction data, which includes sales orders

and purchase orders, which are in various stages of processing. Lastly it is also time to set the go live date.

Final preparation is often the phase that suffers if scope creep is discovered, because that happens usually well into the third phase of realization. At that point there is not much more choice for the management but to reduce testing or employee training in the fourth phase. The result can be that errors are not discovered until the system is already put into use. Similarly the employees' lack of knowledge on using the new system in place can create complicated chain of problems because of the integrated nature of the system.

Cost savings gained by reducing the preparations tend to result in productivity losses and consulting fees in the go live and support phase. This is the final phase where the company begins using the new ERP system. It is wise to try to schedule it for the least busy period in the company. Here is where the adequacy of the help desk is measured as employees tend to have most questions during the first few weeks of operating with the new system, so that should also be scheduled for in the help desk of both project team members and consultants.

Even despite of extensive preparations and testing, new things will come up and the throughput of the system is put to the real test. Therefore it is necessary to monitor the system and have the means to make quick changes if the performance of the system is not satisfactory. As any project, also the ERP implementation should have a completion date set. It should not be extended for any enhancements or additions but those should be managed as separate projects, as they are likely to be needed at least in the form of occasional software package updates. This is where also different systems are needed with which the company runs its business processes and with which any updates are tested. Problems can be prevented by managing the changes in that way more controlled. (Monk, 2009)

3.2 Strategic challenges

ERP system implementation requires that management teams make many careful strategic decisions. The most visible decisions that affect the implementation process and its success are questions of system and process scope. The management has to decide which ERP modules are installed and to what degree will their application components be customized. At the same time they need to decide to which degree common processes will be imposed as opposed to allowing local variation. (Hughes, 2008)

The success of an ERP implementation is dependent on five main variables of an implementation strategy. The five variables are efficiency gains, ease of software customization, gap between business processes and system's reference model, ease of process redesign, and benefits of the change to business. Figure 5 illustrates the five variables in a causal map.

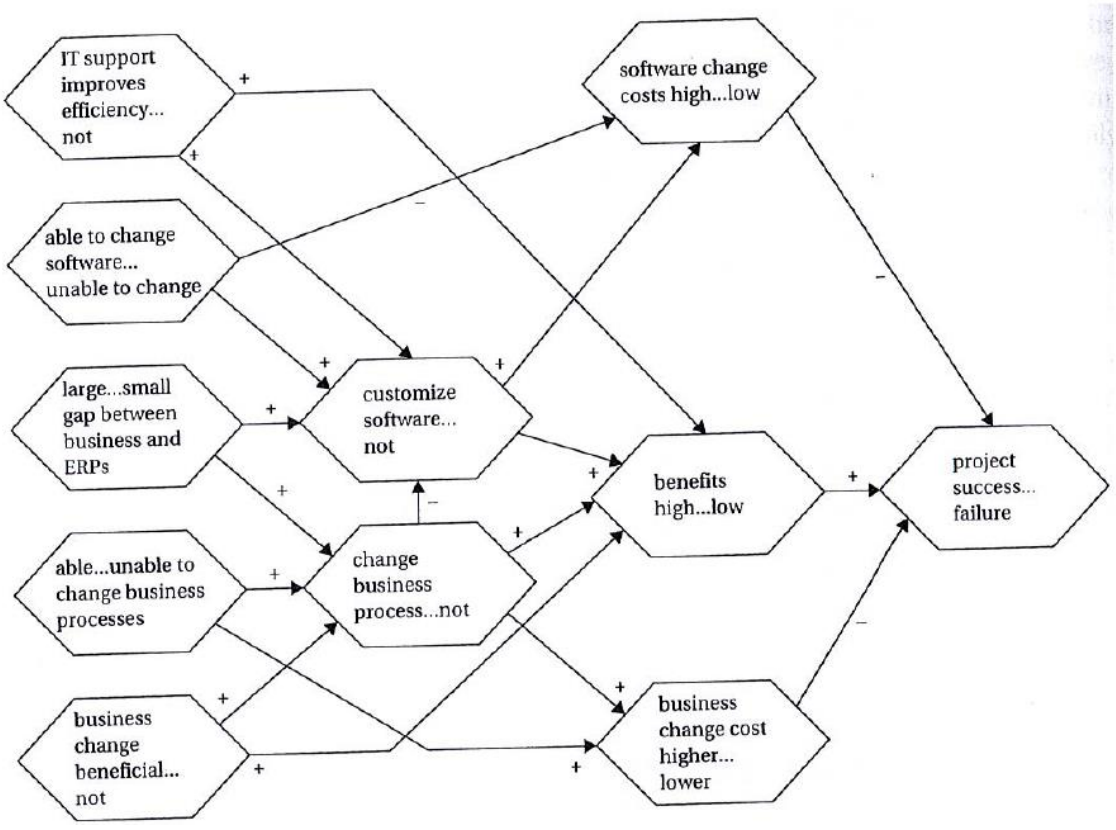


Figure 5. Causal mapping of ERP implementation success (Hughes, 2008)

In the first instance the management needs to look at these five variables to determine the degree of misfit that exists between current business applications and the applica-

tions of the ERP model. The decisions that this leads to is how to deal with the misfits by customizing software and by changing business processes. From that the costs and benefits can be deducted, which then leads to the level of project success. (Hughes, 2008)

3.3 Process improvement

A lot of process improvement happens through employee experience from repeating the business processes that are performed regularly. For that to take place there are three background requirements. The employees need to become efficient in what they do, and that is though being properly trained and the processes being efficiently designed and managed. Those things enable a natural improvement of daily business processes.

Processes that are performed sporadically are often the ones that are least effective. These are also often processes that apply to more than one functional area, and tend to be the ones that "fall through the cracks". When employees do not know how to manage a process in a timely and correct manner, there can be clutters for an unacceptable length of time. ERP systems can be used to automate processes for a better performance as they even provide workflow tools. These are software programs that address the different aspects of a process, including the process steps, the people and the process information involved.

ERP systems make business process designing easier by creating a frame and a flow to the processes. That is because the system has the different functions of the processes embedded in it as well as the requirements for functional steps to carry out the process. So the system binds the process to different consequential steps to be performed before completing the process. On the other hand ERP systems can be for the same reason limiting to business process improvement. Sometimes a process design can be difficult to fit into the frame created by the ERP system.

ERP system implementation is not a one-time project but an ongoing process. Most companies do not use the full potential of an ERP system and especially do not do that just by implementing one. The systems are extremely complicated and there is plenty of more work to move beyond covering the basic functionality necessary to operate.

Therefore it is very important to take a close look at the processes that the ERP system sets a frame for and design them to fit each other. (Monk, 2009)

3.4 Order fulfilment process

Order fulfilment is one of the core supply chain processes managed by using an ERP system. It includes a wide set of work activities with the aim of ensuring that the customer's order is fulfilled as requested. These are all the steps from order entry through production to delivery and after-the-sale services. A well designed and managed order fulfilment process has the capability to compete in all four areas of flexibility, productivity, quality and time across the whole process. (Vonderembse and White, 1996)

Order fulfilment is sequentially the last of four key business processes. Outputs of a previous process are the inputs of the next. So before order fulfilment the market environment inputs have been taken into strategy development process, its outputs into product development, and from there product and process design into developing systems to produce services and goods. The result is the input of facility design (location, capacity, and layout), job design, and information system design which determine the order fulfilment process. Additional inputs coming from outside are customer orders and shipping options. These inputs should be processed with competitive capability in order to get the output of a satisfied customer not merely a delivered product. Figure 6 shows the relationship of the key business processes, with which customer satisfaction can be achieved though not controlled.

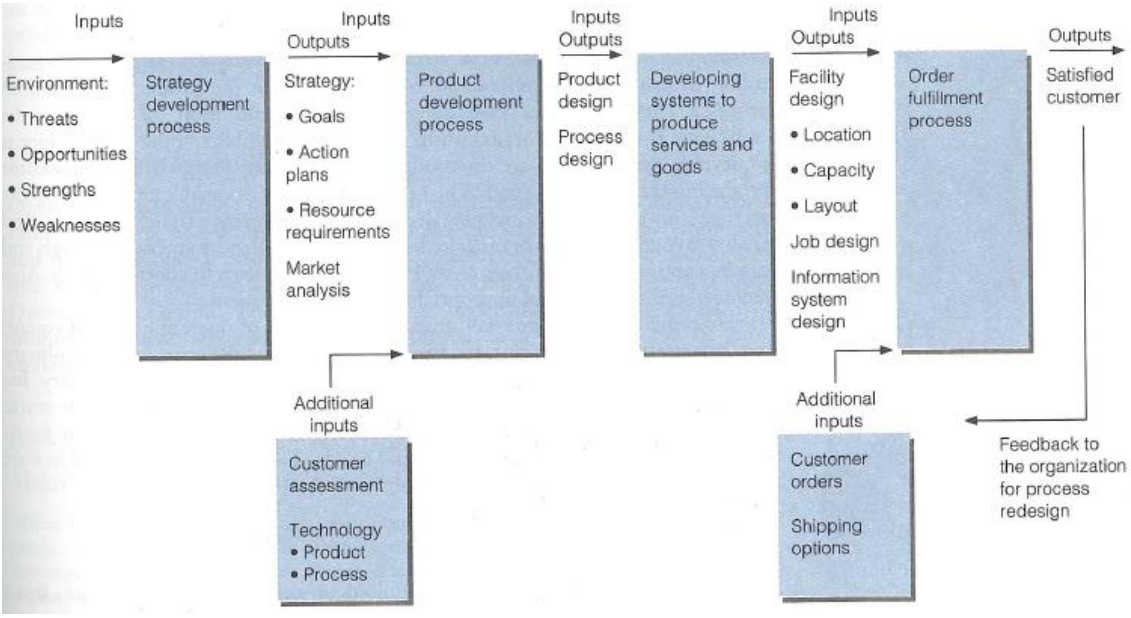


Figure 6. Relationships between key business processes. (Vonderembse & White, 1996)

Important characteristics of order fulfilment process are that it is highly integrative and teamwork-oriented because it includes so many activities from different functional areas. The ability to execute the production of the intended goods comes from planning and managing operations including production planning, scheduling, inventory control, purchasing and material management, and project management. (Vonderembse and White, 1996)

A typical measure of the functioning of order fulfilment process is the order cycle time which is the time it takes for the set activities from the recognition of a customer need to getting the product to the customer. With the realization that much of the fulfilment lead time is non-productive time, managers have come to consider reducing cycle time as an important issue. There are five primary activities which facilitate order fulfilment and when managed efficiently can improve the order fulfilment performance. These activities of order processing, inventory management, facility location and design, transportation management and warehousing are interlinked in many ways in the order fulfilment process as the table below illustrates. (Fawcett et al. 2007)

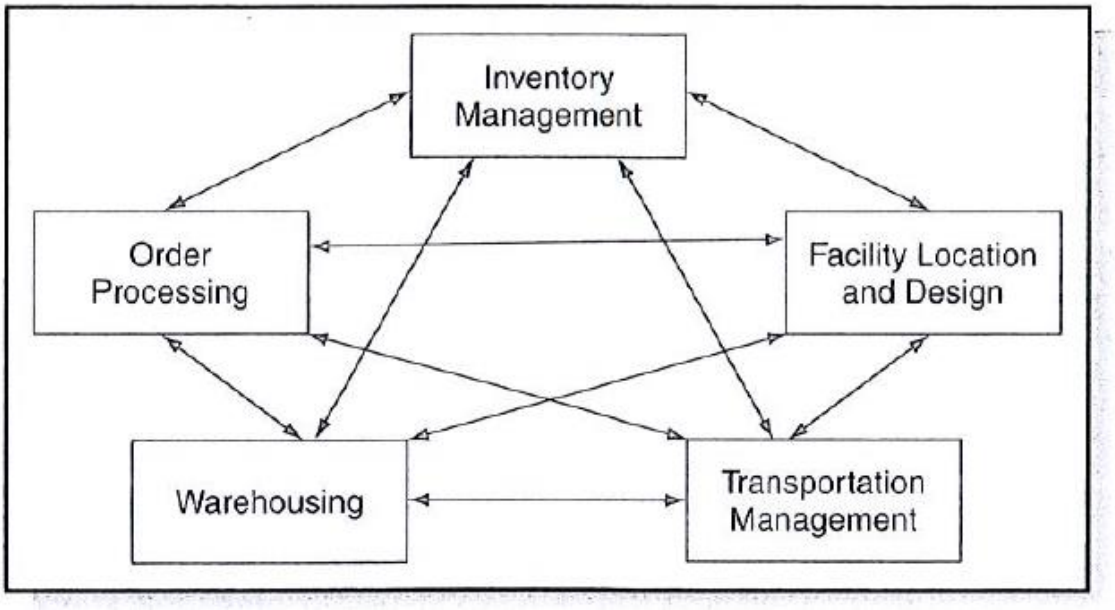


Figure 7. Activities that facilitate order fulfilment. (Fawcett et al. 2007)

There are improvements that can be made on each of the five primary activities to effect the order fulfilment. A right facility location and the use of appropriate process technologies reduces both production and delivery time. Right amount and mix of inventory affects the speed at which an order can be completed. Order processing should be streamlined to save time by eliminating unnecessary steps as well as assuring accurate order entry to eliminate delays and fill orders as specified.

Good and reliable transportation company relationships are the key to reduced transit times and on-time delivery performance. With appropriate technology and handling processes materials flow quickly and smoothly through the warehouses. But as all the activities are interlinked throughout the order fulfilment process, the performance level on any single activity is not as important to a fast-cycle order fulfilment as the coordination of all the activities. (Fawcett et al, 2007)

The complexity of the order fulfilment process is well illustrated by Croxton et al in Figure 8, where the order fulfilment process is divided into the strategic and operational sub-processes as well as process interfaces in between. From a strategic point of view it is important to evaluate the core competencies within order fulfilment and determine the aspects that have the potential to be service differentiating. The operational processes define the steps of how customer orders are fully handled.

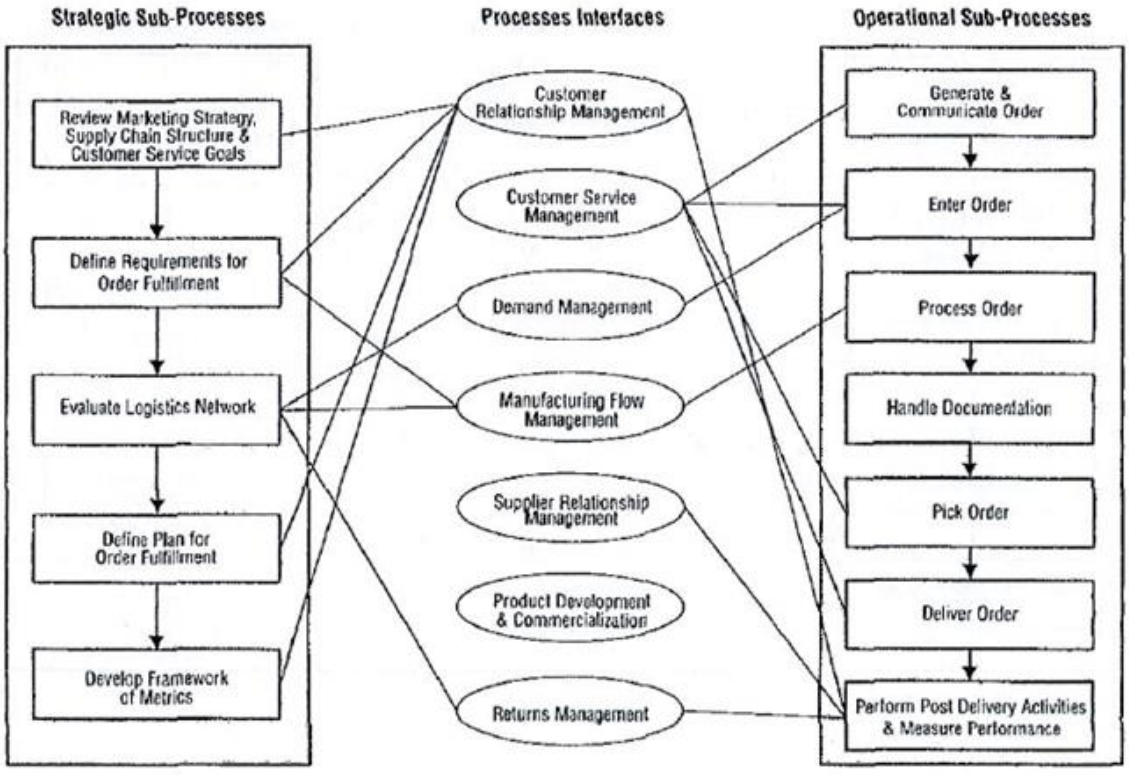


Figure 8. Order fulfilment sub-processes and process interfaces (Croxton et al. 2001)

The designing of a well-functioning order fulfilment process fitted to the ERP system is by no means an easy task or a one-time project. It should be done by a team of experts in the different functional aspects of the process as well as with an understanding and responsibility for the entire process. A well-structured order fulfilment process is defined by how clearly the following six questions are answered: what to do, when, how, who, what information and what performance measures. (Shtub, 1999)

3.5 Training

Training has a significant influence on the overall organizational impact of an ERP system implementation. Training success is directly linked to user satisfaction as well as harvesting of benefits of the system. It is important that the project team is well trained before training the others. They must have an in-depth understanding of the system but also equipped with project management skills. Management and employees need to be provided with the logic and overall concepts of the system. All aspects of the system should be addressed in the training so that all users can learn how to take full advantage

of the system's capabilities. The training must be continuous and based on knowledge transfer principles, not on copying or learning by heart for example. A key factor is that management and all users understand how the system is to be integrated into the overall company operation. (Shahin and Sulaiman, 2011)

Underestimating the time and resources needed for training is a common pitfall that comes as a surprise in ERP implementation projects. Therefore it needs to be considered from a holistic perspective of everyone involved, all the trainers and all the trainees as well as a part of the every part of the life cycle. There are many questions related to the setup of training such as questions of timing, amount, encouragement, costs, structure and materials.

Timing and amount should be based on an estimate of how quick the users will learn, because too early training can be forgotten and too late can lengthen the stabilizing period. Training should also be timed so that the employees understand its equal importance with day-to-day responsibilities. Training can easily become something that is pushed aside from most pressing activities as it is not seen as productive and therefore taken less seriously by the employees. To ensure that this does not happen, companies must emphasize the importance of the training to the employees. Employees may be required to put in extra working hours or companies might hire temporary employees too. The costs of training are usually about 10% or more of the total project budget and often a part of the budget where overrun tends to occur.

Though the structuring of training is mostly dependent on company specific needs and aspirations, the main approach is almost always classroom training. In addition to that internet, computer-based training, and self-study methods can be used. A common approach is to use team members as "super users" to develop user lever understanding and a sense of importance of the training among others as well as to facilitate buy-in from the other users as the teachers is someone they know.

Most commonly used support material is script-based user manuals, which are designed to take the end user step-by-step through an entire transaction. It is a convenient source for answers to frequently asked questions but can be useless if something happens outside the script. Another type of support material is general support which is context-

independent, listing capabilities and defining terms. A combination of these two types of support material can be more useful than either alone. (O'Leary, 2000)

There is need for different types of support not only because there are different types of people learning but also because the training should cover the long period of time that life cycle of the implementation is. Training is often made efficient by arranging it to many people at a time. This is of course practical but there should also one-on-one training or at least one-on-three, which is often more fruitful. The type of support offered during the post-implementation period tends to be remote support. This period should not be seen as less important for training than pre-implementation. Users should not be left with availability of remote support, because it does not help users who do not know what they do not know. Training should still be continued and one-on-one support made available.

One of the measures of successful training is a gained understanding of the purpose of changed work tasks with the new ERP system. Efficient and effective use of the system occurs only after the go-live and requires ongoing training. Leveraging off the new system happens through ongoing implementations, upgrades, business process improvements, and new projects, which all lead to the need for additional training. Technochange management should also be continued post-implementation as it helps identify where further support is needed. (Seddon et al, 2012)

3.6 Managing the change

A key term that cannot be neglected when discussing ERP implementation is organizational change management (OCM). It is far more often more challenging to take people through change rather than data and system technology. For employees the change is most often much bigger than the look of a system. An ERP system changes the way people work, and in order for the new system to be effective it is vital that the employees adapt to new ways of performing their tasks.

Change can easily be labelled as negative, though the truth often is that people do not mind change but being changed. Change resistance in ERP system implementation is born out of a sense of the project being forced on the employees. There can also be a

fear of job loss should the business processes become more effective in a way that requires fewer people to perform them.

Having the employees on board to support the change project is one of the key success factors in an ERP system implementation. From a positive view a new ERP system is a chance to make the company more efficient and effective through business process improvement, which by leading to increased profitability also leads to job security. Contribution and sense of ownership from the employees will not only gain their support but also capture their experience and creativity to develop the process improvement which is the sub-link of ERP implementation. (Monk, 2009)

4 CHANGING ERP SYSTEM AT BILLERUDKORSNÄS FINLAND OY

4.1 Background

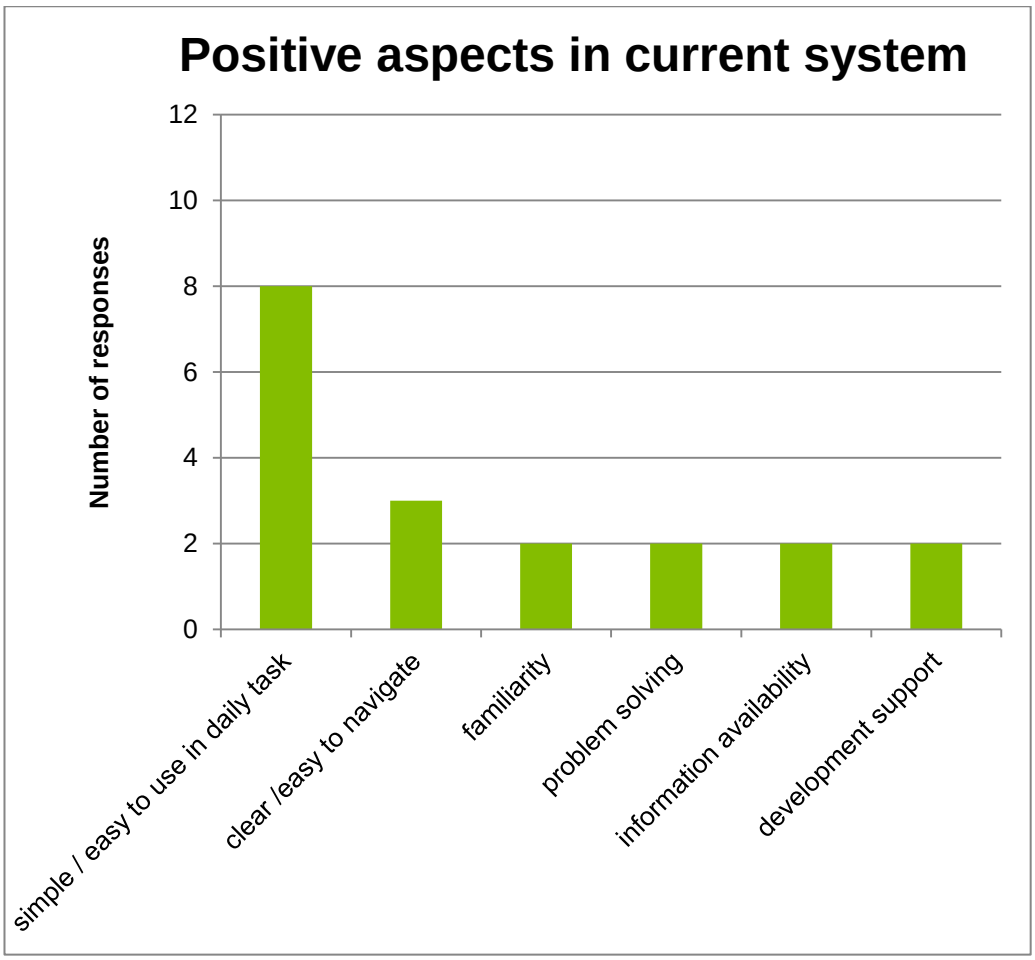
The ERP system change took place in October 2012. The customer service team stopped carrying out the order fulfilment processes in UPM's SAP system and took on Billerud's BonD. This was approximately five months after the acquisition had been finalized on June 1st 2012. In the beginning of 2013 a new customized feature was released to improve the delivery planning process for the Finnish team. The survey was made in January 2014 to see what the team's post-implementation experiences are like. At the time of the survey the team knew that the company is comparing its two systems for the possibility of changing into one. Therefore there are two parts in the survey: the current situation and the upcoming change.

4.2 Current situation

The first two questions in the survey and in the interviews are about the current situation. The intention was to find out what kind of feelings and opinions the personnel has about the current system and the ways of working with it after about a year's experience. The questions are quite open in order not to lead the respondents but to get honest and open reactions from the respondents. Each section starts off with the positive aspects first as those can be more difficult to realize and express than negative aspects that tend to stand out more in every day work. That is why there might have been even fewer and shorter answers if the negative aspects had been considered first.

4.2.1 Positive aspects

The first question was: "Which things do you think work well in the current system and ways of working?" There was quite a lot of consistency in all the twelve responses. The respondents mentioned six different positive aspects about the current system. Each aspect was agreed upon by at least two respondents and up to two thirds of the respondents.



Graph 1. Positive aspects in current system.

Most frequent answer was that the system is clear, simple and quick to use in everyday tasks. Respondents also mentioned that it is easy to navigate in the system, and that there is easy access to further information and to a wide range of it. Familiarity with the system that had developed over the year was also brought up as a positive aspect. The following responses describe well how the personnel currently feel about working with the system:

> *"The system is already familiar, and [I...] have learned the necessary routes and skills to utilize it."*

> *"The system is familiar, and although it has problems, they are mostly known and the problems can be avoided."*

> *"The system offers a lot of information, as long as you know just how to look for it."*

These responses show that the personnel have developed their skills to a very comfortable level and have built up a good connection to the system. It is interesting to see that not only do the daily tasks feel easy, but the personnel have also acquired a deeper level of learning with the ability to solve problems. Working with the system seems to have stabilized and the personnel have even accepted its problems. Respondents also expressed satisfaction about the ways in which the system has been customized both individually and toward the team's needs throughout the whole past year.

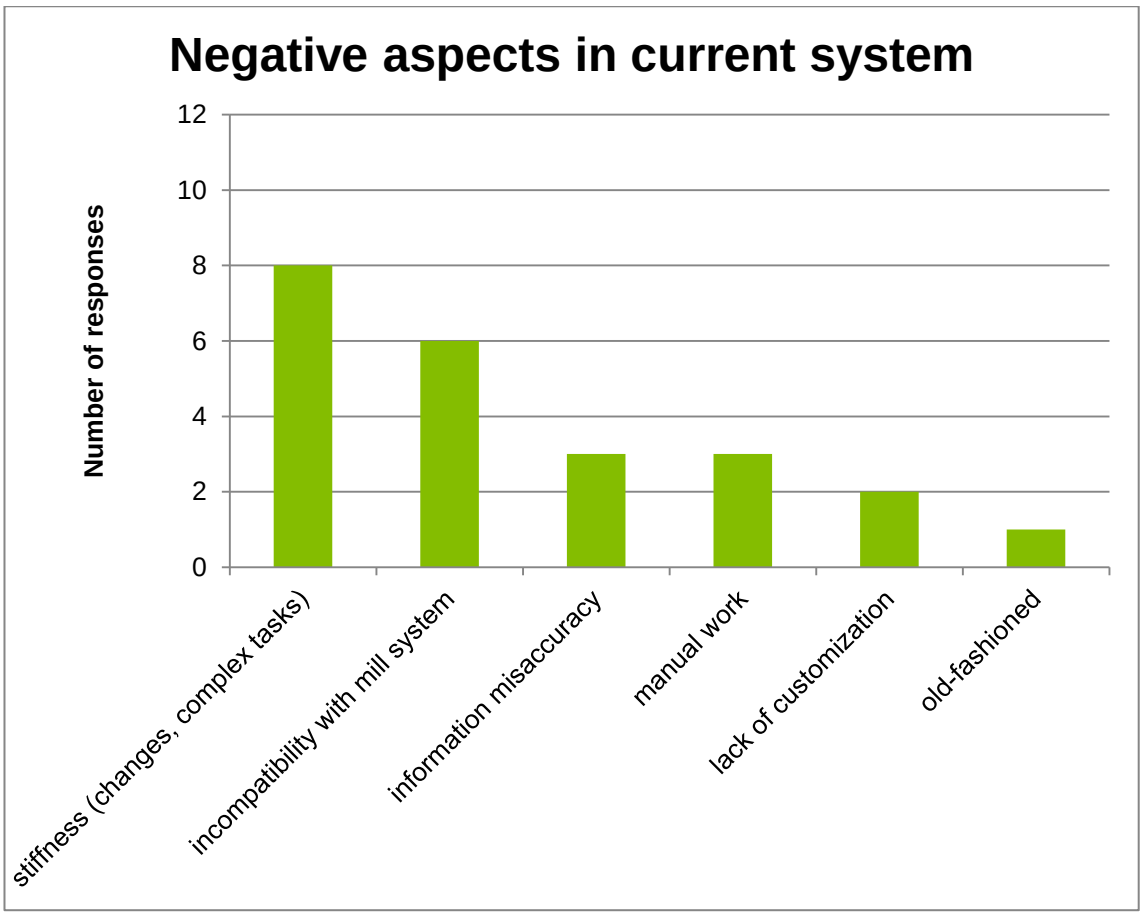
Almost all comments were related to the system and hardly anyone mentioned ways of working as a separate comment. There were only two such comments. One was that there is relatively good support available from Sweden, where the mother company and the IT system support is located. Another comment was that:

> *"Unfortunately I only see improvements to be made in the current ways of working."*

This perhaps also speaks for the lack of comments in the positive aspects in ways of working. Overall the personnel did find a good number of positive aspects about the current system. There was also a lot of consistency and repetition in the responses. It is also important to see that the personnel have established a good stable level of working with the system with developments that have been made during a year's time from the adoption of the new system.

4.2.2 Points for improvement

The second question read: "In which aspects would you like to see improvements in functionality?" This second question got the respondents to write more comments than or at least as many as the first question in all but one survey response where the question was left unanswered. When in the previous question the respondents had complemented the way the current system works in ordinary daily tasks, in the second question the system was discredited for being stiff to use in more complicated tasks or changes.



Graph 2. Negative aspects in current system.

Eight out of twelve respondents wrote that there are consistently difficulties and even problems in making complicated order or delivery bookings in the system or changes to bookings and orders with high status in the mill system. One of the respondents explained this problem with a common example:

> *"Order changes such as delivery time, price, etc. should be made easier. It seems difficult having to undo a run for the sake of order changes that do not affect the order specifications."*

Along with the stiffness of the system, the respondents felt that improvements would be needed in the way the ERP system communicates with the mill system. Six out of twelve respondents noted that it is not only difficult to get the changes in one system through to the other but there are discrepancies in the information between the two systems. According to the respondents, incompatibility of the two systems leads to additional problems with reliability of information and amount of manual work. The users need to double check information in the two systems and some information, in case of

reel classifications for example, needs to be changed manually to match the information in the mill system.

Some tasks also require manual work and information input, which means additional effort and things to remember. According to the respondents this can cause problem situations and unnecessary delay to deliveries. One of the respondents also mentioned that the system is a bit old-fashioned. Several respondents pointed out that the core reason behind some of the problems is the differences between local and mother company requirements, for which the system was designed for. Therefore the respondents would like to see improvements in flexibility for different types of orders and deliveries as well as customization of the ERP system for the team specific needs.

Resolving IT-problems was also brought up as an area, where improvements could be made. Two respondents described this problem deeper and explained that it requires local efforts, yet there is more training to be done locally. Having better local knowledge of IT problem solving would save time and effort as opposed to being so dependent on the IT service desk in Sweden. Some common problems require local involvement but still need major support from the service desk, so the process could be made more efficient. It takes more time to wait for answers from the service desk, and it tends to take a lot of clarifying to accomplish a mutual understanding of the problem.

From a process perspective, the respondent felt that the problem lies in a lack of fitting of the Swedish and the system process model to the specifics of the local requirements. Four out of twelve respondents expressed their concerns about this. Main differences are in the logistics infrastructure and subcontractor relations. Although it was previously mentioned that the main problems with the different requirements in delivery planning have been considered and improvements have been made, this is still an area of concern. The respondents hope that this will be well thought out prior to the new ERP system and process model change that will come along.

One of the respondents pinned down the issue to the fact that clear processes and responsibilities have still not been fully thought through and laid out. Another process which is not well fitted to the Finnish requirements is stock management and reel transfers. The main responsibility over stock management is on different positions in the Finnish and the Swedish model. The local team are no longer allowed to take full re-

sponsibility but at the same time the Swedish colleagues are not used to taking care of the stock in Finnish terminals nor understand the difference. Therefore the process is not clear or well-functioning.

Another problematic process sheet order handling that was specifically mentioned by three of the twelve respondents. This process was originally not designed in the system and there is no EDI connection between the ERP system and that of the subcontractor. One of the respondents describes the problem:

> *"It is very difficult to manage and handle orders that go to subcontractors. There is especially a lot of manual work, things to remember and problem situations."*

The problems are seen in both order handling and delivery planning. One more problematic process area mentioned was invoice checking. The employees use the ERP system to try to verify that invoice amounts are correct. However there does not seem to enough and specific information available. More useful information would be needed from the management in Sweden, for example agreements with the hauliers, to make the invoice control process more efficient and accurate.

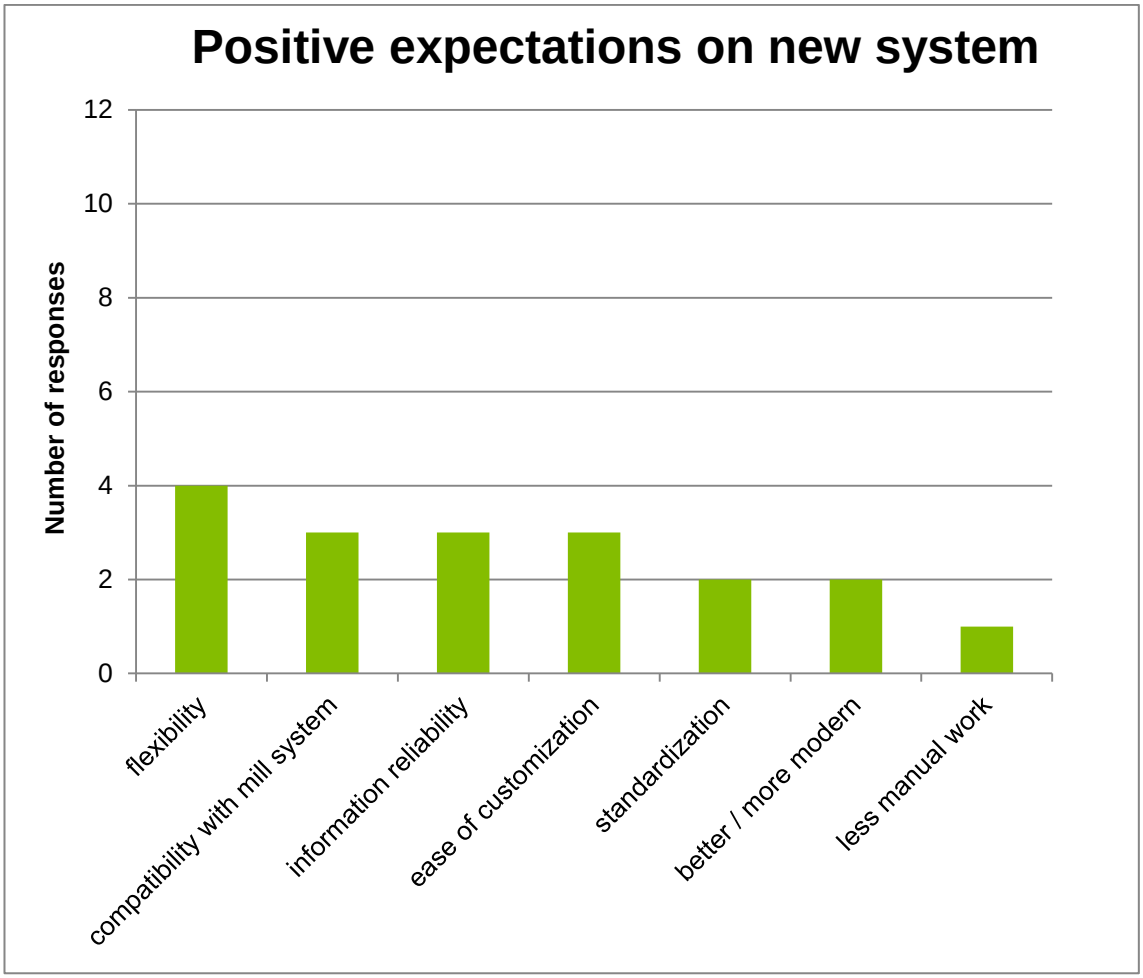
4.3 Upcoming change

The next two questions in the survey were about the personnel's views on changing into a new system. The questions were laid out similarly as the two previous, first the positive aspects and then the negative. These two words were used in the question so that they would be broad enough to allow the respondents to write anything that comes to their mind. In addition the terms benefits and risks were included in the questions to help the respondents with specifics.

4.3.1 Positive views and possible benefits

The third question of the survey was: "What positive aspects / benefits do you see in changing to a new system?" Seven different aspects were mentioned by the respondents

and there was a fair amount of similarity in the responses though one aspect stood out the most.



Graph 3. Positive expectations on new system.

One third of the respondents felt that the new system could bring more of the flexibility that the current system is lacking mainly in delivery planning and order changes. The respondents pointed out that these hopes depend on whether the local requirements have been considered and the problems known with the current system fixed in the new. One respondent also mentioned that with a system less stiff than the current, the amount of manual work could also be removed.

One of the problems that the respondents hope to see disappear is in the communication between the current ERP system and the mill system. The respondents expect that conformity of the two systems will make things simpler for example with problem solving and interpreting information. One of the respondents explained this as follows:

> *"If we can fix the problem [that] in some aspects the systems do not support each other and the information is not necessarily updated, it will be an absolute improvement. If functions are done in the same system, these problems will disappear automatically, at least partially."*

Another benefit that was brought up about having the same supplier for both the ERP system and the mill system was the familiarity that the team already has with the supplier. As the team has worked with the supplier for a couple of years from the implementation of the current mill system to solving problems and making updates to the system, a relationship has already been built between the two companies. The employees at the supplier have already built an understanding of the company's supply chain processes and ways of working. This knowledge could thus be beneficial in how the new system is customized.

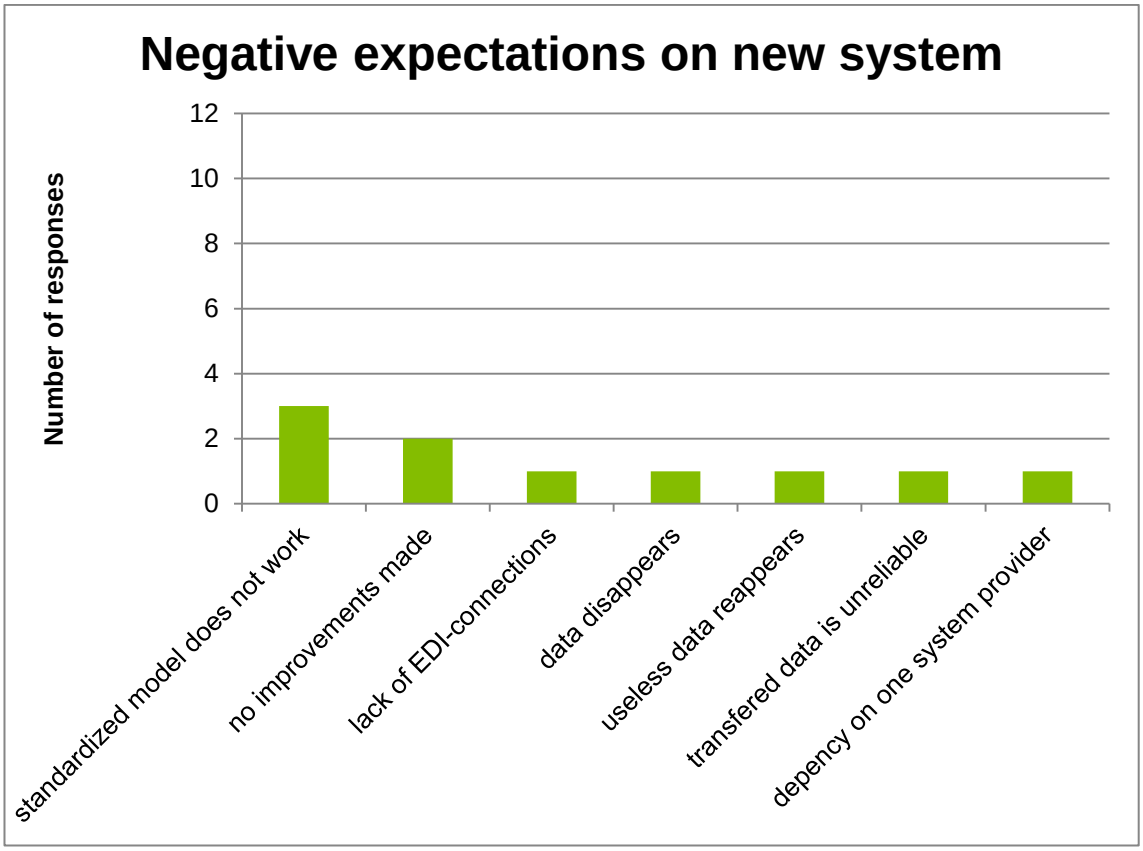
Two respondents felt that the new system is likely to be simply better by being more modern than the current system. They felt that there is a good chance that enhancements and developments will be made when a new system is implemented. Several respondents thought that the experience from the previous ERP system implementation should become useful and benefit the team in the face of another one. They wrote that since there is knowledge about the team's requirements and problems, these issues can be taken into consideration before a new ERP system implementation.

One of the respondents described how the spirit in the team is hopeful and that there is both high motivation and expectations for a new change. Two of the respondents saw a benefit in a standardization that a new across company ERP system would bring into processes and measurements for all the different mills and customer service centres.

4.3.2 Negative views and possible risks

The employees have varying views on possible risks that there are in changing to a new system. As some respondents saw the benefits of standardization from an across company system implementation, other's saw it as a possible risk. A fear that the new system implementation would bring along a standardized process model that would not work for the local order fulfilment operations was mentioned in one fourth of the re-

sponses to the fourth question: “What negative aspects or risks do you see in changing to a new system?”



Graph 4. Negative expectations on new system.

The respondents raised concerns about enough consideration being taken on local areas as well as different functional areas that is across the whole order fulfilment process from order intake to planning, production and logistics. The respondents questioned whether one ERP system can really work across the whole company in both Sweden and in Finland. One of the respondents described this fear of different requirements being met by answering:

> *“I am afraid that the new system is designed mainly for those machines where big quantities of for example one quality or width are produced.”*

Another question raised was whether change meant improvement and that such would really be brought along with a new system. Some respondents saw risks in data transfer and establishing EDI-connections, as well as IT problems that can be inevitable in the beginning. One of the respondents also expressed a concern for the reliance on one sup-

plier for both IT-systems in use. This could mean that there would be problems in both systems at the same time, whereas previously only one system had been down at once and information would still be available. Three respondents focused only on concerns related to the system itself and two respondents left this question blank.

Most of the concerns expressed in the fourth question were not so much about the system itself but about the implementation process and its management. Though the respondents would describe these possible risks differently, the topics were similar. Three of the respondents expressed that they were worried about the situation directly after go live, where a momentary chaos might be inevitable. Two respondents felt that the change might turn out to be a disappointment and cause rejection as well as a drop down in motivation.

Many of the respondents were not very specific in their responses about the negative aspects they see in the change process. There seems to be a common understanding of what the previously experienced problems are. Perhaps there is a feeling that those are better left unsaid or that they have been discussed to a great extent already. This was summarized in one of the responses:

> *"Mainly problems related to project and general change management, that we had when we moved to the current system."*

Two of the respondents felt that the main risk is the timing of the training and as a result the lack of it. It was both felt that the training might take place too early on, when it is difficult to apply it or not on a too tight schedule, not early enough. Another risk brought up was uneven focus of both importance and work amount on different occupations. A bigger burden might be on those employees whose tasks are seen as more important or on those who are left to less consideration and more on their own. Overall the responses to this question show that respondents are aware of the challenge that the change is from both system and process point of view.

4.4 Personnel wishes

The fifth question read: “How would you (in your own position) as well as all employees to be taken into consideration after the decision to change the ERP system has been made? This question brought about most of the longest responses, so these are probably the issues that are most important to the employees. There was also a lot of similarity in the responses, which suggests that these issues really have influenced the employees in the previous system change. Two respondents wrote that they would hope that the previous experience would be used to learn from possible mistakes and that it would have been understood what could be done better or differently. One respondent wrote that he or she wished that there were not these changes so often. Having two of such big changes so close to each other might be wearing the team out but is also seen as beneficial from a point of view of gained experience.

One third of the respondents hope that the upcoming ERP implementation project would have a clear timetable, which would be presented well in time. It is important for the employees to know what is going to change, when, how, and why. This would help everyone in the team to be able to follow the process and know what is expected of the team. The respondents also mentioned that it is important that the roles and responsibilities are clear, so that everyone knows who does what.

In addition to receiving written information the respondents felt that there should be someone in place who is looking after the schedule and informs others of the progress and possible changes. It is necessary to have someone lead the change also locally not only by the project management in Sweden. After the previous experience the respondents were left with a feeling that there was either lack of control or lack of informing. Good connections to and support from the Swedish side of the project team is needed to find answers to anything that might me unclear. A better knowledge of issues concerning the team in Finland especially is needed and those employees concerned should be better informed. The respondents also emphasized that all information should be shared well in time. Also to be remembered to be kept on board, are all the different parties involved such as sales offices, hauliers, harbours and subcontractors.

There were two issues that were raised by almost all respondents: resources and training. Ten out of the twelve respondents hoped that there would be enough resources

when there is additional workload such as during testing. It was also mentioned that this should be well planned and early on before the change. Especially the human resources within the team could have been better allocated according to the respondents. Several employees would have wanted to be more involved and those that were the most would have liked to share the workload. There is a sense that the employees feel left outside both before and after the change, which is described as follows in one of the answers:

> "*I wish that the employees would be taken along into the system development and that there would be enough technical support available at the implementation*."

Nine out of twelve respondents hoped that they would be considered by providing enough training. This was detailed down to two key aspects: timing and targeting. The respondents emphasized the importance of everyone receiving the training from early on and in that way being part of the preparing for change as well. It was also felt that the training should be more of a team effort rather than having only one person trained to be responsible for each function. There was also a mismatch in the training because some tasks were eventually shifted from one function to another or not clearly assigned. In addition several employees did not take part in the right training because they were later on moved from one function to another when it became necessary. The employees are also hopeful that their previous experience will be turned into a lesson learned and the same mistakes will be avoided.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 What should the company take from the current situation?

5.1.1 Introduction to a new system

An ERP system models a process organization in that there is a whole set of applications which are integrated. This is enabled by a single unified database, which creates availability and transparency of information. ERP systems were developed for the requirements of the competitive business environment to support performing business processes with flexibility to changes, improved productivity, quality of technology and operations, as well as simply to reduce order fulfilment time. Yet ERP systems are not only designed for running everyday operations but to forecast future repercussions.

The results show that the employees are satisfied about working with the current ERP system in daily tasks. The way the employees described the prior ERP implementation tells how difficult it first was to get going with the current system. It is clear that the employees have developed their skills over the year and therefore are now happy with the familiarity of the system and how they are able to navigate in the system.

The employees' positive feelings about the current system are also connected to the improvements that were made in a customized update in early 2013. This has given the employees a feeling that their point of view has been taken into consideration and been given support. There is a sense of feeling that they have been met half way, instead of only them having to go all the way to adjust to the demands of the system. With that has come an acceptance toward the fact that some of the employees are still facing some difficulties and problems but they can be proud of themselves in being able to work around them and solve them. The employees have truly found the benefits of the current ERP system both in everyday use as well as in advance use.

The aspect that is most important to employees to start with is the ease at which they can perform everyday tasks. This is also the main reason why ERP systems were developed. Though an ERP system has many benefits beyond that, it is important to keep this simple perspective in mind and focus first on creating a good sense of familiarity at this

level. Then the employees are not overwhelmed by everything that the system can do. The management surely has this wider vision of the benefits in mind whereas the employees develop problem solving skills and learn to appreciate the system more over time. It is therefore most important to first try to maintain a sense of security among the employees.

5.1.2 The relationship of the system and the processes

ERP systems developed hand in hand with process organizations – organizations that are not merely a compilation of separate functions but have designed business processes that work across the different functions. A process has an identifiable beginning and an end, a preferred order of actions, inputs and clearly defined outputs. In modern day process organizations the customer is at the centre and all the processes are geared toward adding value to the customer. How an organization designs and is able to perform its business processes is what creates its competitive capabilities: flexibility, productivity, quality and time.

The survey results showed that the current ERP system is not fully aligned with the current order fulfilment processes. Working with changes in the system is stiff, and therefore the employees cannot promise flexibility to customers. The ERP system was said to be old-fashioned, lacking in customization, and in compatibility with the mill system, which means that it does not enhance quality. The employees also have to work with information inaccuracies and in some cases it adds to manual work. All of these negative aspects about the current ERP system are harmful to productivity both in terms of time and effort the order fulfilment process takes.

The lack of process efficiency is connected to both the ERP system and the process design. Both of these have been changed but not systematically and all the time hand in hand with one another, rather in separate turns. All the different changes that the team has faced, have also been compiling up in a rather short amount of time, there being altogether six changes starting from late 2009 at UPM, to 2012 with Billerud and to 2013 with BillerudKorsnäs. Business process redesign ought to be held in a central role throughout the change process. It should be remembered that though an ERP system itself changes ways of working, it is not a separate entity that determines and forces the

way of working. The system and the processes should be used to shape one another in order to gain the most optimal way of delivering quality to the customer.

5.2 What to expect and prepare for in the new system change?

5.2.1 Opportunities and threats

ERP system implementation is a great opportunity, to use the wide variety of its benefits to improve the company's performance on different levels of the supply chain. The system benefits are mainly based on the availability and integration of data, which creates operational transparency and efficiency. A more cost efficient IT infrastructure and more automated cross functional processes improve both internal and external business processes. An ERP system also provides tactical benefits for the management to improve cost management and customer service through better planning and monitoring possibilities. Thirdly there are strategic benefits to be gained from improved use of material and labour resources, which supports business growth and organizational learning.

At the same time there are risks involved which can be related to business design or implementation. An ERP mismatch is a risk that can have the most severe impact. To avoid it both a careful selection and design is necessary. Should the new ERP system need a greater level of customization, its functionality is put at risk. A more common risk is a lack of financial support and human resources. Implementation projects can easily become rushed and overload the project team. A tight schedule and resources are a strain on the training and personnel. An ERP system often shifts tasks from one function to another, which adds to the training. If the employees do not adopt the new system properly either because of lack of skills or resistance, the system benefits are not gained with the implementation.

The results of the survey show that the employees have a good amount of high hopes for the benefits that the new system can bring. Improvements into operational efficiency are welcomed and standardization is also seen as an improvement to cross-company processes and co-operation. The employees are also happy that the supplier of the new system is already familiar to the company, which should make the co-operation and customization efforts easier. An underlying factor however is whether the employees

are heard and the local requirements taken into consideration to make the best of the new system and its implementation.

The employees also have justified fears. Their biggest concern is that a forced standardized business process model is implemented without proper consideration and thorough planning from different points of view and across the whole order fulfilment process. It was felt that if the implementation is not successfully carried out and there are difficulties after it, this will bring down the employees' overall motivation. A third main concern brought up was whether there would be enough importance placed on the training by considering all employees equally and allocating enough time to it.

In order to take full advantage of a common ERP system, there needs to be a wider focus than a functioning ERP system after an implementation. With careful design and planning both internal and external business processes can be improved as well as the overall quality of customer service. With better management of material and labour resources, business growth and organizational learning can also be achieved. These wider benefits need to be actively grasped as well as taking awareness of the risks that can diminish them. The results show that the employees look at the change positively and are willing to accept new processes. Should those turn out to be poorly designed and if the training lacks time and resources, the results are unmotivated inadequately skilled employees working in unfitted processes.

5.3 What to do differently based on the employees' previous experience?

5.3.1 Project management

ERP system implementation is a huge project and an investment for a company. Firstly it should be well-planned and organized to avoid scope creep. For the implementation to go smoothly and to provide value, it is most critical that process mapping is carefully done. In this second phase the ERP system should then be configured in a way that the company will run its business. However an ERP system implementation is not a one-time project but an ongoing process. Natural improvement to daily business processes happens when employees are properly trained and become efficient in using well de-

signed and managed processes. Processes that need additional attention are those that are performed sporadically or apply to more than one functional area. These tend to be least effective and fall through the cracks.

A well-functioning order fulfilment process should be designed by a team of experts in the different functional aspects of the process as well as with an understanding of and a responsibility for the entire process. As all the activities are interlinked, the performance level on any single activity is not as important to a fast-cycle order fulfilment as the coordination of all the activities. At the end, the output of the whole process needs to be a satisfied customer not merely a delivered product. An important strategic decision is to which degree common processes will be imposed as opposed to allowing local variation. A practical realization is created in a development system after which a final phase of testing and training can be carried out. Unfortunately these final steps are most likely to suffer when scope creep is discovered. Reduced testing and training, results in finding errors that lead to additional costs later on.

The employees' previous experience shows that an ERP implementation project is quite overwhelming for them especially at go-live and was also followed by weeks of instability. A new system itself is a big change and a lot to take in, but then on top of that the new processes are not clear and fully fitted, there is a sense of chaos among the employees. The employees turn to the closest project team members who easily become overburdened. The team struggled with working in everyday processes, which resulted in a great amount of stress and an inability to provide a good level of customer service. It took three months to resolve the situation and to implement an enhancement designed for the team.

A common strategic decision behind ERP implementation projects is to have a standardized order fulfilment process model within the entire company. It is an ambitious goal and it cannot be achieved by merely limiting the system to the use of one model. It takes a lot of careful process planning, otherwise re-planning and new enhancement will be needed afterwards when it is more costly and problems have already occurred.

5.3.2 Change management

Change management is a crucial and challenging part of an ERP system implementation project. The importance of actively taking and keeping people on board with the change should not be disregarded. A general misconception is that employees dislike and oppose change. A resistance is rather born out of a sense that the project is being forced upon the employees and that they are forced to change. There is also a justified fear of job loss. On the contrary a new ERP system can be seen and presented as a chance to make the company more efficient and effective through business process improvement, which leads to increased profitability and job security.

The results show that the employees have fears of the change, but at the same time they are anticipating it with high hopes. What the employees emphasize the most in their hopes is clear management and open communication. Through both of them they can be part of the change unlike last time when waiting as useless not sure, who is going to do what, when, how and why. The employees felt that they were missing both strong local leading and support from the mother company.

As the employees talk about the amount of support it is not necessarily only the amount of time spent in the office with them but rather how the support is communicated and how they feel connected to the people working in the other country. Though everyone cannot be part of the actual project team or go through all the same training, the change process can be made into more of a whole team effort. The key is to find the tasks that can be shared among those that would like to be involved rather than having the project team members as complete representations of the whole customer service teams. When a change is designed by the project team behind the scenes and then presented as a final product, all the others are made into spectators instead of participants. The fact that the employees want to be a part of the change, is an asset to be used. It is an opportunity to take their skills and views to develop the order fulfilment process. This is one of the greatest and most long lasting benefits that can and should be gained from an ERP system implementation.

REFERENCES

Anderegg, T. 2002. ERP: A-Z Implementer's Guide for Success. Resource Publishing, Eau Claire, USA.

BillerudKorsnäs. 2014. Financial Report. Read 15.11.2014. http://www.billerudkorsnas.com/Investor-Relations/Financial-Reports/

Croxton, K. L., García-Dastugue, S. J., & Lambert, D. M. 2001. The Supply Chain Management Processes. The International Journal of Logistics Management. 12: 2.

Fawcett, S. E., Ellram, L. M., & Ogden, J. A. 2007. Supply Chain Management: From Vision to Implementation. Pearson Education, Inc., New Jersey, USA.

Gaia. 2014. Read 15.11.2014. http://www.gaia.se/referens/billerud-bond

Gillham, B. 2000. Case Study Research Methods. Continuum. London, UK & New York, USA.

Huhges, B. 2008. Exploiting IT for Business Benefit. The British Computer Society, Swindon, UK.

Jacka, J. M. & Keller, P. J. 2002. Business Process Mapping: Improving Customer Satisfaction. Wiley, New York, USA.

Krajewski, L. J., Ritzman, L. P., & Malhotra, M. K. 2008. Operations Management: Processes and Value Chains. 8th ed. Pearson Education, Inc., New Jersey, USA.

Mehrjerdi, Y. Z.. 2010. Enterprise Resource Planning: risk and benefit analysis. Business Strategy Series. Emerald Group Publishing Limited. 11: 5.

Monk, E. & Wagner, B. 2009. Concepts in Enterprise Resource Planning. 3rd ed. Course Technology Cengage Learning, Boston, USA.

O'Leary, D. E. 2000. Enterprise Resource Planning Systems: Systems, Life Cycle, Electronic Commerce, and risk. Cambridge University Press, Cambridge, UK.

Shahin, D., Sulaiman, A. 2011. The influence of organizational factors on successful ERP implementation. Emerald Group Publishing Limited. 49: 6.

Shang, S. & Seddon, P.B. 2000. A comprehensive framework for classifying the benefits of ERP systems. Proceedings of the Sixth Americas Conference on Information Systems, Long Beach, USA.

Shu, Y. & Yang, C. 2009. The relationship between benefits of ERP systems implementation and its impacts on firm performance of SCM. Journal of Enterprise Information Management. 22: 6.

Shtub, A. 1999. Enterprise Resource Planning (ERP): The Dynamics of Operations Management. Kluwer Academic Publishers, Boston, USA.

Staehr, L., Shanks, G. & Seddon, P. B. 2012. An Explanatory Framework for Achieving Business Benefits from ERP Systems. Journal of the Association for Information Systems. 13: 6.

Themistocleus, M., Irani, Z. & O'Keefe, R. M. 2001. ERP and Application Integration: Exploratory Survey. Business Process Management Journal, 7: 3.

Tieto. 2014. Read 15.11.2014. http://www.tieto.com/industries/forestry-wood-pulp-paper/it-solutions-pulp-paper-and-board-companies/paper-industry-mes-software-tieto-integrated-paper-solution-tips

UPM. 2014. News. Read 26.4.2014. http://www.upm.com/en/media/all-news/pages/upm-sells-its-packaging-paper-assets-to-the-swedish-billerud-001-wed-01-feb-2012-09-40.aspx

Van de Putte, G. 2003. Implementing EDI solutions. IBM, Raleigh, USA.

Vonderembse, M. A. & White, G. P. 1996. Operations Management: Concepts, Methods, and Strategies. 3rd ed. West, St. Paul, USA.

APPENDICES

Appendix 1. Survey: Preparing for a new ERP system implementation

BillerudKorsnäs Finland Oy
Personnel survey
3.1.2014

Preparing for a new ERP system implementation

Which things do you think work well in the current system and ways of working?

In which aspects would you like to see improvements in functionality?

What positive aspects / benefits do you see in changing to a new system?

What negative aspects or risks do you see in changing to a new system?

How would you like yourself (in your position) as well as all the employees together be taken into consideration after the decision to implement a new system?

Other thoughts: